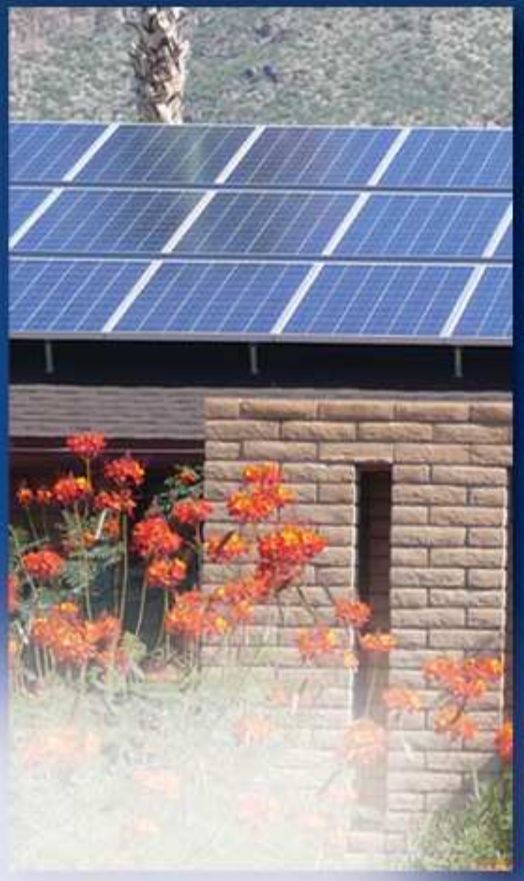

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Solar Power 101 – PV (Photovoltaic) Basics

- Definitions
- Before Going Solar (Conservation)
- How PV Works
- Various PV Installations
- Steps to going Solar
- Q and A

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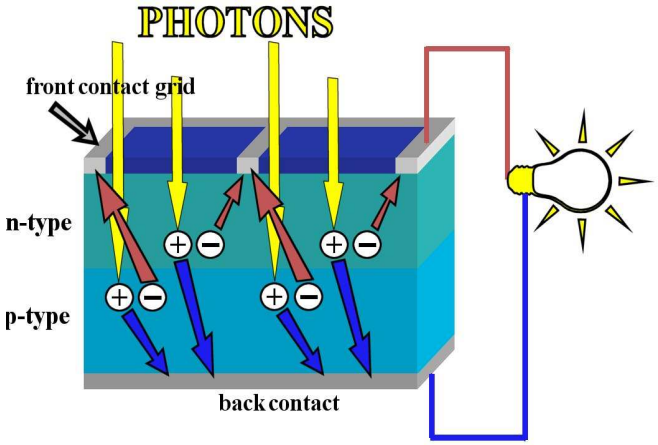
Definitions

Converting Sunlight to Solar Electricity

pho·to·vol·ta·ic (f½”t½-v¼l-t³“¹k, -v½l-) *adj*. Capable of producing a voltage when exposed to radiant energy, especially light.

Sunlight (photons) push electrons around in something called a PN junction which is the building block of the computer industry. Once the electrons get pushed out of their resting place (holes) their only way to reunite as an electron-hole pair is to ride back through a light, motor, etc. and do useful work for us.



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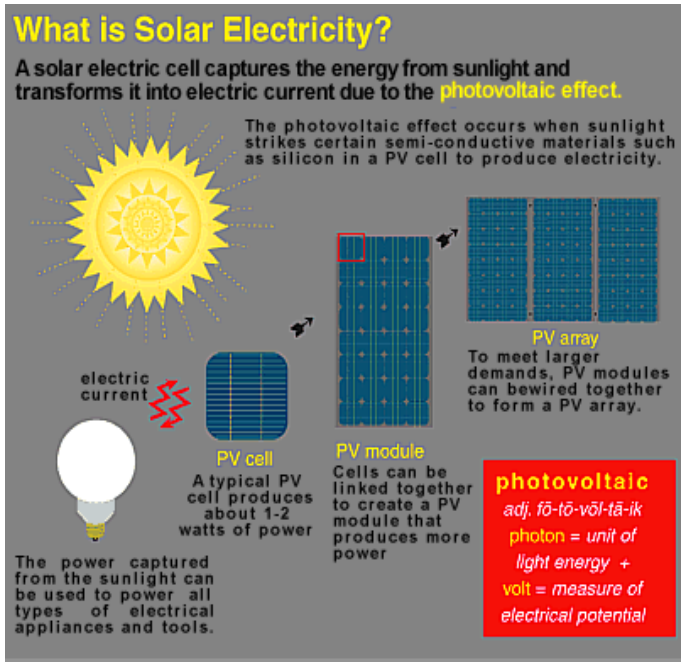
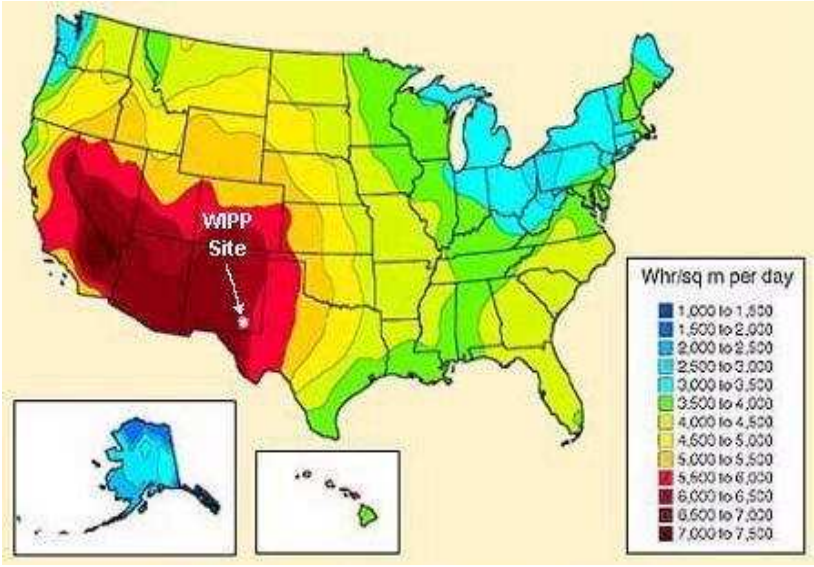
Definitions

Photovoltaics



Insolation



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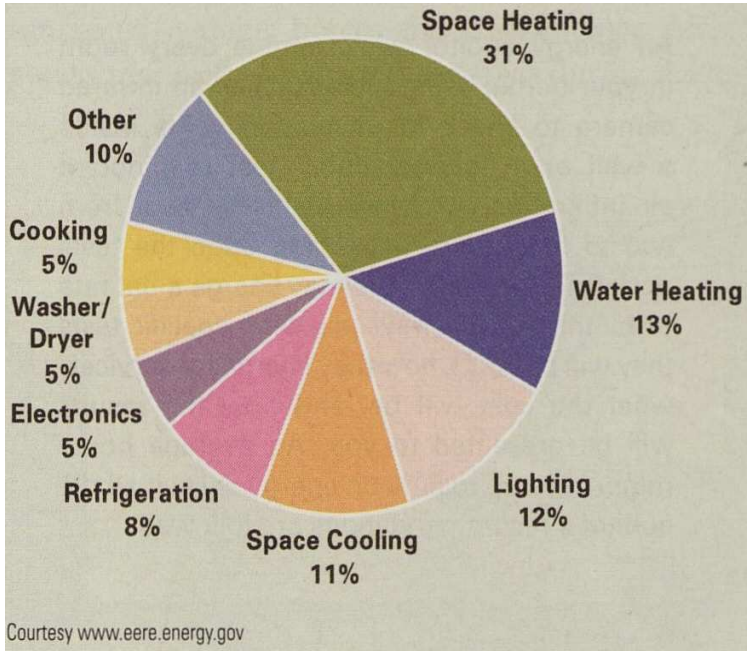
Before Going Solar (Conservation)

U.S. Energy Consumption

North America has 7 percent of the world's population, and consumes 30 percent of the world's energy.

- Energy Ottawa



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Before Going Solar (Conservation)

What is the Grid?

The North American Grid at Night.

The Grid is a power delivery network.

By comparison, the Internet is an information delivery network.

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Before Going Solar

Conservation

- Eliminate clothes dryer use
- Use compact fluorescent or LED bulbs
- Replace pre-1993 refrigerators, don't use in garage
- Buy front loading washing machine (when replacing)
- Use a hot water heater blanket
- Use power strips to control phantom loads
- Schedule car free days
- Add attic insulation
- Recycle
- Use a Kill-A-Watt meter to measure appliance loads. Available for under $30.
- When replacing, buy at least SEER 14 AC/heat pump unit

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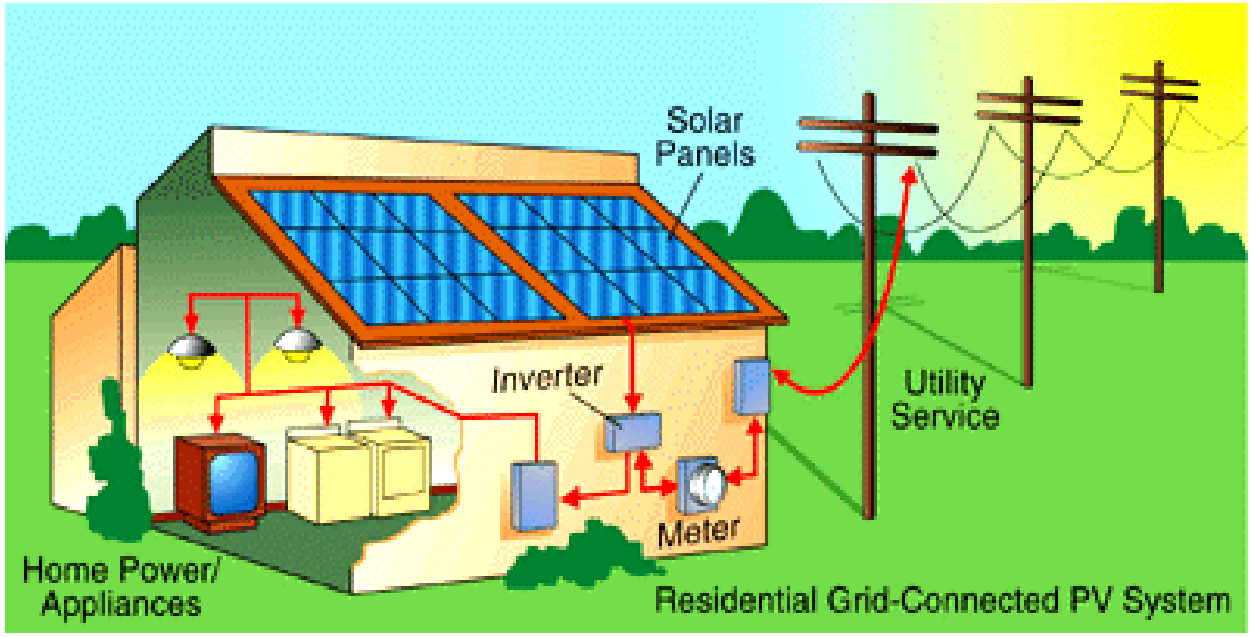
How Grid-Tied PV Systems Work

- PV panels produce DC electricity which is then converted to AC house current using a Grid-Tied Inverter
- If the house can't use all the electricity the PV system produces, then the excess is put back on the grid for others to use.



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PV Installations

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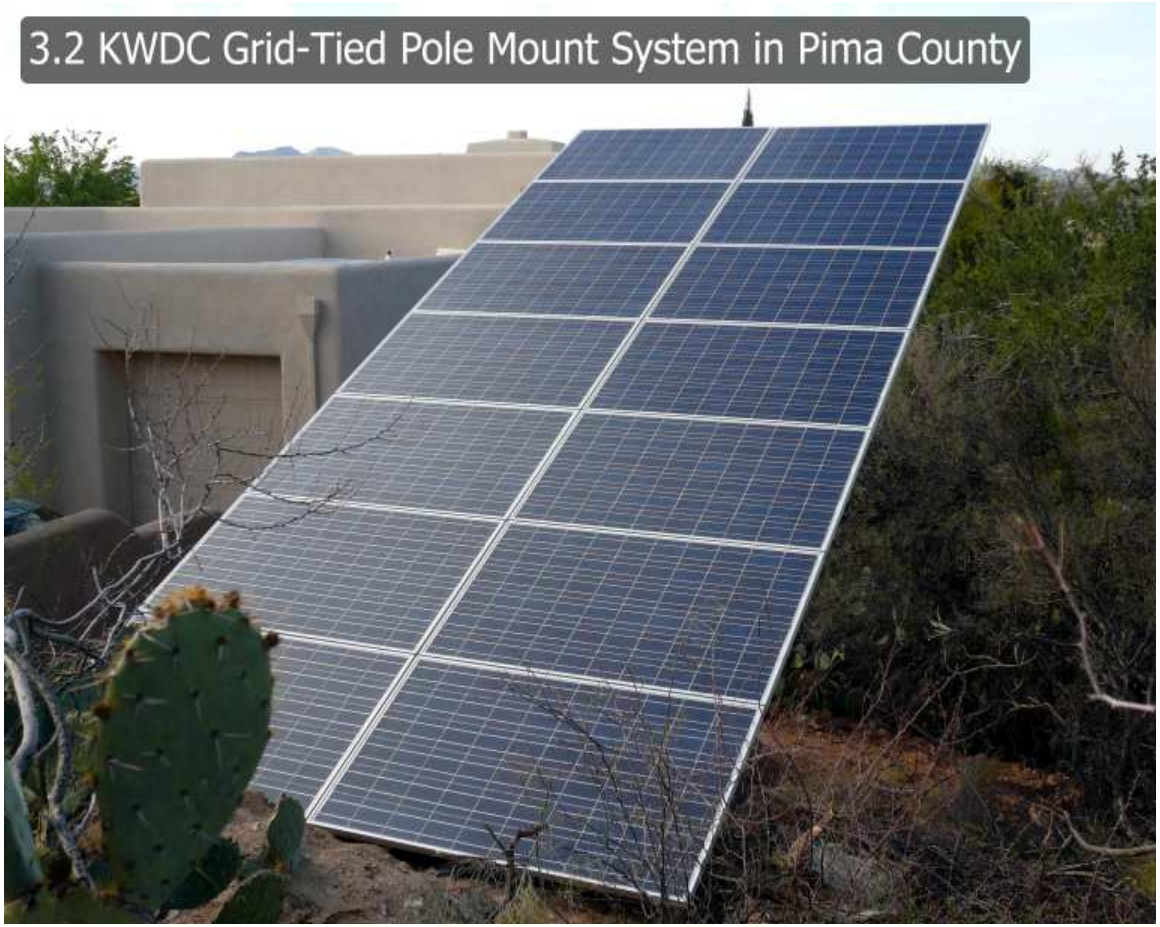
PV Installations

3.2 KWDC Grid-Tied Pole Mount System in Pima County



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PV Installations

Solar Lighting for Trico Electric Cooperative Headquarters

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PV Installations

Solar Lighting for Trico Electric Cooperative Headquarters

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Steps to Going Solar

Contact an installer to perform an on-site evaluation

- Determine historical energy use from electric bills
- Determine roof area available for photovoltaic panels
- Select location for photovoltaic panels, solar inverter, and production meter
- Discuss costs for various system sizes
- Discuss installation timing

Decide to Go Ahead with Photovoltaic Installation

- Submit application to electric utility
- Sign contract with electric utility
- Sign contract with licensed contractor

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Steps to Going Solar

Contractor Installs System

- Generate design drawings and pull permit
- Install system on scheduled week
- County or City inspects system once installation is complete
- Utility Sends Rebate Check 6 to 8 Weeks after they inspect system

Enjoy decades of environmentally friendly and maintenance free electricity

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Example Pricing

5KW PV System @ $5.50/watt

Total Cost $27,500

TEP Rebate $15,000

Total Cash Outlay $12,500

State Tax Credit $1,000

Federal Tax Credit $3,750

Net Project Cost $7,750

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Q and A